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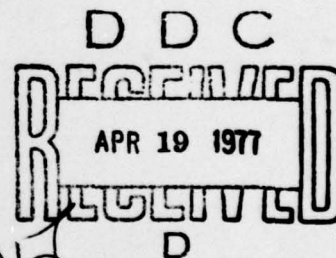SAN DIEGO, CALIFORNIA 92152

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THE RECRUIT TEMPERAMENT SURVEY (RTS) AS A PREDICTOR OF

PARA-MEDICAL EFFECTIVENESS CRITERIA [1]

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The Recruit Temperament Survey (RTS) was devised by Waite and Barnes (1968) to identify naval enlistees who are likely to experience either psychiatric or administrative difficulties while in the U. S. Navy. The results from past research conducted with this instrument have indicated that the RTS has considerable potential for predicting both diagnostic and effectiveness criteria (Bucky, Edwards, and Berry, 1973; Bucky and Edwards, 1973; Waite and Barnes, 1968; Hoiberg, Hysham, and Berry, 1973). Until recently, however, most of this research has been undertaken using samples drawn from the Navy enlisted population at large. Little consideration has been given to evaluating the usefulness of RTS responses for identifying individuals who are unlikely to adjust satisfactorily to working in a particular occupational specialty.

One Navy occupational group having a comparatively high incidence of psychiatric hospitalization and a relatively low level of effectiveness is that of Hospital Corpsman (HM). Plag, Arthur, and Goffman (1970) have reported that the proportion of HMs was about two and a half times greater among Navy psychiatric patients than among a control sample of Navy personnel. Furthermore, Plag, Goffman, and Murphy (1970) have found that when effectiveness was defined as completion of an initial term of obligated service with a recommendation for reenlistment, the rate of effectiveness for HMs (82%) was significantly lower than the rate of effective-

ness for sailors graduated from other service schools (90%). The poten-
tial consequences of this problem have become evident as more and more
of these Navy para-medical personnel, in response to the growing shortages
of health care professionals, are being assigned to increasingly responsi-
ble tasks, including patient-related activities formerly reserved exclu-
sively for physicians and nurses. One approach to preventing a decline
in the quantity and quality of health care delivery is to develop im-
proved procedures for screening out potential psychiatric casualties and
poor performers prior to classification into the Navy para-medical
specialties.

Classification into the HM occupational group is presently based
upon a demonstration on standard Navy tests of sufficient academic apti-
tude to absorb the information and techniques which are presented during
occupational training (Thomas, 1972). Noncognitive characteristics such
as psychiatric symptoms, attitudes, and past behavior of the individual
are considered by classifiers only in a cursory and highly subjective
manner. The RTS, however, has been designed to assess these character-
istics in an objective manner. By adding the RTS to the present combi-
nation of aptitude measures, it may be possible to reduce the incidence
of psychiatric hospitalization significantly and increase the level of
effectiveness for HMs.

Two studies which were recently completed have shown that RTS
responses are predictive of psychiatric hospitalization among HMs
(Booth, Bucky, and Barry, 1973) and can be used to differentiate
effective HMs from noneffective HMs (Booth, Bucky, and Edwards, 1973).

The purpose of this study was 1) to determine whether the RTS adds to the accuracy of predicting corpsman effectiveness beyond what can already be achieved by using aptitude measures alone, and 2) to determine the validity of RTS responses for predicting a combined psychiatric hospitalization and noneffectiveness criterion.

METHOD

Sample.

The subjects used for this study included 1315 Navy enlisted men who entered the Navy Hospital Corps School, San Diego, between October 1966 and September 1967.

Measures.

The measures used in this research included the RTS and two aptitude tests. The RTS contains 105 "true/false" items which focus on personality, attitudinal, and background characteristics of the individual. The General Classification (GCT) and Arithmetic Reasoning (ARI) tests were employed as indices of aptitude. All of these measures were administered to the subjects at the beginning of basic training.

Three empirically-derived RTS scales which had been developed in previous investigations were used in this study to evaluate the unique contribution of RTS responses to the prediction of para-medical effectiveness criteria. The first two scales, the EFF and AO scales, contain 22 and 36 items, respectively, and were developed by Booth, Bucky, and Edwards (1973) for the purpose of discriminating effective HMs from noneffective HMs and all other Navy enlisted personnel. The third scale, the PSY scale, contains 19 items and was developed by Booth, Bucky,

and Berry (1973) to discriminate between HMs who became psychiatric
casualties and those who did not. In addition, a simple sum of the
GCT and ARI aptitude scores was employed as the benchmark against
which to determine the contribution of RTS responses. These two
aptitude scores were summed because this combined index, which was
developed to predict final school grade in HM training (Thomas, 1972),
corresponds most closely with the way in which classifiers presently
use this information in evaluating potential HMs.

Criteria.

Two dichotomous criteria were employed for the purposes of this
study: an effectiveness criterion and a combined psychiatric hospitali-
zation and effectiveness criterion. On the effectiveness criterion,
those subjects who had completed an initial term of obligated service
with a recommendation for reenlistment were classified as effective
(78% of the sample) whereas the remaining subjects were classified as
noneffective. To develop the combined criterion, those subjects who
had a record of one or more admissions to the psychiatric sick list
were combined with the noneffective subjects and contrasted with the
remaining effective subjects (75% of the sample). It should be noted
that HMs who had been prematurely separated from the service for reasons
unrelated to effectiveness (e.g., physical disability, hardship, or
death) were not included in this sample.

RESULTS

The sample was stratified on both criteria and divided randomly
into validation and cross-validation groups. Relationships between

by using aptitude alone. The F-ratios for this increase were 8.99 and 9.79 (df=3,653).

When the equations developed in these analyses were cross-validated with the remaining subjects, no evidence of shrinkage was found. Cross-validity coefficients for the effectiveness criterion were .18 and .28. Comparable coefficients for the combined criterion were .16 and .28.

DISCUSSION

The results of this study indicate that personality, attitudinal, and background characteristics, as measured by the RTS, can contribute significantly to the prediction of Navy para-medical effectiveness criteria. Furthermore, the magnitude of this contribution appears to have practical as well as statistical significance. By combining the RTS and aptitude measures, the percentage of explained variance was nearly tripled on both criteria. It should be noted, however, that the percentage of explained variance was still rather low even after RTS measures had been added to the aptitude composite.

Combining psychiatric casualties with noneffective HMs did not modify the predictive validity to any significant degree. One reason for this finding may have been that the number of HMs who were admitted to the psychiatric sick list, but who went on to perform effectively after returning to duty, was actually quite small. Only 37 of the psychiatric casualties (about 40%) went on to complete an obligated term of service with a recommendation for reenlistment. The remaining casualties had already been included among the 291 noneffective HMs.

The small number of additional casualties, therefore, added little new
variance to the effectiveness criterion.

The low validities which were found in this study indicate not
only the need for improved predictors, but also the need for additional
para-medical effectiveness criteria. The criteria used in this research
were primarily indices of withdrawal from the job. Psychiatric hospi-
talizations and premature separations from service represent clear-cut
and quite serious withdrawal behaviors. Unfortunately, no criteria
were available on these subjects which could be used as indices of on-
the-job performance. Among those subjects classified in this study as
"effective" were HMs who were performing at levels of effectiveness
which undoubtedly ranged from marginal to outstanding. Ignoring these
performance differences severely curtailed the variance on these cri-
teria and the validity which could have been achieved in predicting
them. Research to develop new criteria is presently underway with the
goal of making further improvements in the selection and utilization
of Navy para-medical personnel.

FOOTNOTES

[1] This study was supported by the Bureau of Medicine and Surgery,
Department of the Navy, under Research Task M4305.07-3011DXB5. The
opinions expressed are those of the authors and are not to be construed
as those of the Department of the Navy.

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Table 1

Intercorrelations and regression weights for
the HM validation group (N = 658)

Predictor variables	Intercorrelations					Weights[a]	
	PSY	EFF	AO	Effec. Crit.	Comb. Crit.	Effec. Crit.	Comb. Crit.
Aptitude Index	-.05	-.15	.10	.16	.14	.13	.12
PSY scale		.74	.13	-.15	-.18	-.07	-.16
EFF scale			-.08	-.20	-.19	-.12	-.05
AO scale				.10	.09	.09	.10

[a] Standard score rather than raw score regression weights were shown
in this table because they provide a more readily apparent index
of a variables relative contribution to prediction of the criterion

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Three Recruit Temperament Survey (RTS) scales, which had been developed in previous studies, were evaluated as potential contributors to the prediction of effectiveness criteria for Navy hospital corpsmen (HMs). A combined score on two standard Navy aptitude tests was used as the benchmark against which the unique validity of RTS scores was assessed. It was found that this combined aptitude score, which was developed to predict final school grade in HM training and is presently used to select personnel for the HM specialty, had an average cross-validity of .17 (p $<$.05) for predicting post-training effectiveness

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criteria. By adding the three RTS scale scores to this aptitude under the composite cross-validity for predicting these criteria was raised to .28 ($p < .001$). This increase was highly significant ($p < .001$) and indicates that personality, attitudinal, and background characteristics, as measured by the RTS, can contribute to the prediction of Navy para-medical effectiveness criteria.